

CLAIMS

We claim:

1. An inter-axle differential, comprising:
 - an input shaft disposed about a first axis;
 - an output shaft coaxial with said input shaft;
 - a spider coupled to said input shaft, said spider having a plurality of radially outwardly extending arms;

5 a plurality of differential gears mounted on said spider, one of said plurality of differential gears disposed about one arm of said plurality of arms;

10 a thrust washer disposed about said one arm, radially outwardly of said one gear;

15 a retaining ring disposed in a groove in said one arm radially outwardly of said thrust washer; and first and second side gears in mesh with said differential gears, said first and second side gears configured to transmit power to first and second axles of a vehicle.

2. The inter-axle differential of claim 1, wherein said thrust washer includes a radially inner concave spherical surface and a radially outer surface having a recess formed therein.

3. The inter-axle differential of claim 1, wherein a radially outer surface of said thrust washer defines a recess configured to receive said retaining ring.

4. The inter-axle differential of claim 3, wherein said thrust washer includes a tab extending into said recess and into a gap formed in said retaining ring.

5. The inter-axle differential of claim 1, wherein said thrust washer defines a tab that extends into a gap in said retaining ring.

6. An inter-axle differential, comprising:
an input shaft disposed about a first axis;
an output shaft coaxial with said input shaft;
a spider coupled to said input shaft, said spider having a
5 plurality of radially outwardly extending arms and at least one
of said arms having:
a radially inner portion; and,
a radially outer portion;
said inner and outer portions substantially circular in
10 shape and said outer portion defining flats;
a plurality of differential gears mounted on said spider,
one of said plurality of differential gears disposed about said
inner portion of said one arm;
a thrust washer disposed about said outer portion of said
15 one arm, said thrust washer having a central bore shaped
complementary to said outer portion of said arm;
a retaining ring disposed in a groove in said one arm
radially outwardly of said thrust washer; and,
first and second side gears in mesh with said differential
20 gears, said first and second side gears configured to transmit
power to first and second axles of a vehicle.

7. The inter-axle differential of claim 6, wherein said
thrust washer includes a radially inner concave spherical surface
and a radially outer surface having a recess formed therein.

8. The inter-axle differential of claim 6, wherein a
radially outer surface of said thrust washer defines a recess
configured to receive said retaining ring.

9. The inter-axle differential of claim 8, wherein said
thrust washer includes a tab extending into said recess and into
a gap formed in said retaining ring.

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10. The inter-axle differential of claim 6, wherein said thrust washer defines a tab that extends into a gap in said retaining ring.